

Natural Gas Fired Combustion Turbines (Combined Cycle w/ HRSG)

Plant (Year)	Attainment Status	Unit	Turbine Capacity (MW)	Unit Max Hourly HI Rate (MMBtu/hr)	40 CFR Part 60, Subpart KKKK <sup>1</sup>	State Permit NO <sub>x</sub> Limits (ppm @ 15% O <sub>2</sub> )	Max NO <sub>x</sub> Emissions Allowed by Permit (TPY)	NO <sub>x</sub> Controls
Plant A (2014)	Attainment	CT 1	185	2320	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 1 + HRSG 1: 2.0 CT 2 + HRSG 2: 2.0	CT 1 + HRSG 1= 73.5 CT 2 + HRSG 2= 73.5	CT 1 and HRSG 1: DLN+SCR CT 2 and HRSG 2: DLN+SCR
		CT 2	185	2000	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh			
		ST	204					
		HRSG 1			54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
		HRSG 2			54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
Plant B <sup>3</sup> (2009)	Nonattainment	CT 1	178	2125	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 1 + HRSG 1 when run as Combined Cycle: 2.0 CT 1 when run as Simple Cycle: 9.0 CT 2 + HRSG 2 when run as Combined Cycle: 2.0 CT 2 when run as Simple Cycle: 9.0	196.63 - 364.67 <sup>4</sup>	For both CT 1 and CT 2: DLN+SCR when run as Combined Cycle DLN - when run as Simple Cycle
		CT 2	178	2125	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh			
		ST	178					
		HRSG 1		523-688 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
		HRSG 2		523-688 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
Plant C (2014)	Attainment	CT 1	232	3071	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 1 + HRSG 1: 2.0 CT 2 + HRSG 2: 2.0	CT 1 + HRSG 1= 119.66 CT 2 + HRSG 2= 119.66	DLN+SCR
		CT 2	232	2835	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh			
		ST 1	339					
		HRSG 1		468 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
		HRSG 2		468 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			

Natural Gas Fired Combustion Turbines (Combined Cycle w/ HRSG)

Plant (Year)	Attainment Status	Unit	Turbine Capacity (MW)	Unit Max Hourly HI Rate (MMBtu/hr)	40 CFR Part 60, Subpart KKKK <sup>1</sup>	State Permit NO <sub>x</sub> Limits (ppm @ 15% O <sub>2</sub> )	Max NO <sub>x</sub> Emissions Allowed by Permit (TPY)	NO <sub>x</sub> Controls
Plant D <sup>6</sup> (2014)	Attainment	CT 3	232	2835	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 3 + HRSG 3: 2.0	CT 3 + HRSG 3= 119.66	DLN+SCR
		CT 4	232	2835	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh		CT 4 + HRSG 4: 2.0	
		ST 2	339				CT 4 + HRSG 4= 119.66	
		HRSG 3		468 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
		HRSG 4		468 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
Plant E <sup>8</sup> (2017)	Attainment	CT 1	232	2944	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 1 + HRSG 1 when run as Combined Cycle: 2.0 CT 1, when run as Simple Cycle: 9.0	CT 1 + HRSG 1 when run as Combined Cycle= 97.32 - 119.01	For both CT 1 and CT 2:  DLN+SCR - when run as Combined Cycle  DLN - when run as Simple Cycle
		CT 2	232	2944	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh		CT 1 when run as Simple Cycle= 96.96 - 100.98	
		ST	339				CT 2 + HRSG 2 when run as Combined Cycle= 97.32 - 119.01	
		HRSG 1		468 (and 4000 hr/yr) <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>	CT 2 + HRSG 2 when run as Simple Cycle: 9.0	CT 2 when run as Simple Cycle= 96.96 - 100.98 <sup>7</sup>	
		HRSG 2		468 (and 4000 hr/yr) <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
Plant E <sup>8</sup> (2017)	Attainment	CT 1	360	4564	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 1 + HRSG 1: 2.0	CT 1 + HRSG 1= 187.72	SCR
		CT 2	360	4564	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh		CT 2 + HRSG 2: 2.0	
		ST	511				CT 2 + HRSG 2= 187.72	
		HRSG 1		802 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			

Natural Gas Fired Combustion Turbines (Combined Cycle w/ HRSG)

Plant (Year)	Attainment Status	Unit	Turbine Capacity (MW)	Unit Max Hourly HI Rate (MMBtu/hr)	40 CFR Part 60, Subpart KKKK <sup>1</sup>	State Permit NO <sub>x</sub> Limits (ppm @ 15% O <sub>2</sub> )	Max NO <sub>x</sub> Emissions Allowed by Permit (TPY)	NO <sub>x</sub> Controls
Plant F <sup>9</sup> (2017)	Attainment	HRSG 2		802 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
		CT 1	361	4564	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh	CT 1 + HRSG 1: 2.0	CT 1 + HRSG 1= 202.85	DLN+SCR
		CT 2	361	4564	15 ppm @ 15% O <sub>2</sub> or 0.43 lb/MWh		CT 2 + HRSG 2: 2.0	
		ST	508					
		HRSG 1		835 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			
		HRSG 2		835 <sup>5</sup>	54 ppm @ 15% O <sub>2</sub> or 0.86 lb/MWh <sup>2</sup>			

Abbreviations

CT - Combustion Turbine

DLN - Dry Low NO<sub>x</sub> Burner

HI - Heat Input

HRSG - Heat Recovery Steam Generator

MW - Megawatt

MMBtu/hr - one million British Thermal Units per Hour

NO<sub>x</sub> - Oxides of Nitrogen

ppm @ 15% O<sub>2</sub> - parts per million at 15% oxygen concentration in the stack, i.e. NO<sub>x</sub> emission limit expressed as a pollutant concentration

SCR - Selective Catalytic Reduction

ST - Steam Turbine

TPY - Tons Per Year

Notes

<sup>1</sup> 40 CFR Part 60, Subpart KKKK covers the New Source Performance Standards (NSPS) for natural gas-fired combustion turbines constructed, modified, or reconstructed after February 18, 2005, as well as any associated heat recovery steam generators (HRSG).

<sup>2</sup> If the heat recovery unit operates independently of the combustion turbine, regardless of size, the unit will have a NO<sub>x</sub> emission limit of 54 ppm at 15% O<sub>2</sub> or 0.86 lb/MWh.

<sup>3</sup> Per the facility's permit: both turbines shall not exceed 2500 hr/yr of Simple Cycle operation; permit allowed three options of turbine model and class, hence HI ranges

<sup>4</sup> TPY limit is total limit (both CT1 and CT2) and is dependent on turbine selected for the site and if facility run as simple or combined cycle.

<sup>5</sup> New Source Review permit limit

<sup>6</sup> Per the facility's permit: duct burners of HRSGs limited to 468 MMBtu/hr and max. of 4000 hours of operation annually; permit allowed two options of turbine model and class, hence HI ranges

<sup>7</sup> TPY limit is total limit (per unit) and is dependent on turbine selected for the site and if facility run as simple or combined cycle.

<sup>8</sup> Per the facility's permit: each CT and associated duct burner shall not exceed 4512 MMBtu/hr

<sup>9</sup> Per the facility's permit: each CT and associated duct burner shall not exceed 4564 MMBtu/hr